

Testimony for the hearing on political interference with the work of government climate change scientists, Congressional Oversight and Government Reform Committee, Jan. 30, 2007, U. S. House of Representatives

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I thank the committee for the opportunity to testify on the present state of climate science and on my experiences with political interference in the communication of climate science by government researchers. I have been a researcher at NASA's Goddard Institute for Space Studies since 1995, and a lecturer at Columbia University since 1997. This is relevant to my expertise, but today I am presenting testimony as an individual. My participation is not connected to my job duties as a NASA scientist.

Scientists provide information to policy makers and the public on issues affecting society. Climate change is such an issue, and one for which it is especially critical that decisions be made using the best available scientific information as the potential costs to society of action, or of inaction, are large. The Earth as a whole is unquestionably warming, and virtually all climate scientists believe that the evidence regarding a human role in this warming is clear and compelling. Multiple lines of evidence based on measurements, theory, and computer modeling support these conclusions. Observations of the oceans, glaciers and ice sheets, the atmosphere, and ecosystems all show that the impacts of climate change are already being felt. The scientific evidence indicates that the Earth is now warmer than at any time during the last 1000 years, and probably warmer than at any time during the last 5000 years. While continued warming is inevitable, the seriousness of the consequences of climate change will depend upon societal action to limit the emissions of greenhouse gases and pollutants that are the dominant cause of global warming. These consequences include shifts in weather patterns and an increased frequency of extreme events leading to more droughts and floods, an increase in the severity of summer heatwaves, and a rise in sea levels that could devastate low-lying coastal areas.

Although the scientific basis for the conclusion that human activities are altering Earth's climate is very strong, arguments are still raised over whether current scientific understanding justifies societal action. One of those arguments concerns Antarctic temperature trends. While most of the planet has warmed rapidly during recent decades, much of Antarctica has cooled. Lack of an adequate explanation for this has been cited as evidence that scientific understanding of climate change is too incomplete to warrant taking action to mitigate global warming.

In the fall of 2004, a team I led published a paper providing an explanation of how ozone depletion over Antarctica and increasing greenhouse gases could together account for the observed cooling over much of Antarctica (and the warming over the Antarctic Peninsula, the one area where observations showed a warming trend). This study, using the NASA Goddard Institute for Space Studies climate model, was the first to look at how these two factors work together to influence Antarctic temperatures. The study not

interest evidenced by today's hearing will lead to continued improvements in policies to protect the integrity of government science and its communication to the public. While NASA has taken important steps to ensure scientific integrity, even there the process of managing communication between scientists and the public or the press still lacks transparency. Revisions to releases are typically sent anonymously from Headquarters and with minimal explanation. While political appointees will always be at the top of government agencies such as NASA, it is vital to protect the ability of government scientists to communicate to the public without political interference. The taxpayers fund scientific research, so should be able to know and benefit from the outcomes. In a democratic society there is no justification for suppressing scientific information about climate change.

Even with the best possible information, policymakers must make subjective decisions in the face of uncertainty. These types of decisions go on all around us, for example when a doctor decides on treatment based on the best medical evidence despite the fact that medical science does not understand all aspects of the human body. The public must trust the evaluation of the evidence by policymakers in the same way that patients must trust their doctors. Suppression of scientific evidence has undermined the trust between the public and policymakers and between scientists and policymakers. Cases where scientific uncertainties were exaggerated by political appointees have been equally troubling. Restoring the necessary trust will require the highest standards of scientific integrity and transparency in policies regarding scientists' interactions with the public and in decision-making on the urgent issue of climate change.